

FY06 NOvA R&D budget request to PPD

J. Cooper

9/21/05

NOvA R&D WBS	Category	FY06 item	K\$ in FY06	K\$ roll-up
1.1	Site and Building			490
1.2	Scintillator			316
1.3	Fiber			201
1.4	PVC Extrusions			312
1.5	PVC Modules			303
1.6	Electronics			724
1.7	Data Acquisition			0
1.8	Detector Assembly			355
1.9	Project Management			156
		"Project" R&D Subtotal		2857
Fermilab Sci Support				96
		travel, guess half of group to one meeting elsewhere?	20	
		summer students for Anna Pla, \$ 4K each?	12	
		summer student with Hans Jostlein?	4	
		Remodel 13 S crossover (usually Div Office pays, but just so it doesn't get forgotten)	50	
		Probably some furniture required?	10	
			TOTAL	2953

Assumptions

- We extract real cost estimates for the project by getting bids on the “Integration Prototype Near Detector” with options for the 30 kt detector
 - We need the cost estimates this fall
 - We can’t get a serious “budgetary estimate” for the 30 kt quantities for 2009, so go for RFPs and really buy something now to get serious vendor attention to the option
 - This is how we structured the Extrusion RFP
 - Bids due back on 9/23, so we will see how it worked.
 - The “Integration Prototype Near Detector” is meant to operate in March 2007
 - So we don’t need “everything” in FY06
 - e.g. we don’t have a place for scintillator until March 07
 - BUT, we do need this mechanism for the cost estimate

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1.1	Site and Building			490
		FESS charges through CD-1 review (incl. Steve Dixon)	110	
		FESS charges CD-1 --> end of FY06	330	
		additional AE consulting for TDR	50	
1.2	Scintillator			316
		to Indiana, test other mixtures	25	
		Procure pre-mixed samples from Bicron and Eljen. Both this and the line above need quantities so that others can do lifetime test of their components	25	
		Obligate procurement(s) 40,000 gallons for prototype Near Detector \$ 2.81/gal for mineral oil=\$ 101 K, Jul05 budgetary quote \$ 165 K for concentrated fluor mix at 10% by weight Aug05 budgetary quote	266	
1.3	Fiber			201
		to MSU, test various fiber vendors	50	
		to South Carolina, fiber tests	15	
		\$ to other universities for fiber lifetime test in scintillator?	30	
		Procure 113 km fiber for prototype Near Detector @ \$0.95/m	106	
1.4	PVC Extrusions			312
		16-cell extrusions, buy 36 tons PVC resin @ \$1.25/lb for 4000 meters used in prototype Near Detector. This material gets used with the die purchased in FY05 on that \$ 275 K req.	90	
		3-cell extrusions, new die & tests with different mixtures	32	
		Travel to above two vendors (2 trips to each, 2 people?)	8	
		test different mixtures with old die at 1st FY05 vendor	17	
		to ANL for engineering on extrusions (1FTE, 50/50 share)	100	May be Minn
		to ANL for tech help (1 FTE 50/50 share)	65	

NOvA R&D WBS	Category	FY06 item	K\$ in FY06	K\$ roll-up
1.5	PVC Modules			303
		to Minnesota, more top manifold design	25	
		to Minnesota, factory design studies	25	
		prototype injection molds for top manifolds	100	
		buy PVC for 400 bottom closures for prototype Near Detector (Lab 8 effort in addition)	3	
		procure 400 top manifolds for prototype Near Detector - this estimate if done at Lab 8 here, just 10 times the pounds of PVC since no labor. If we try to do injection molding of part or all of this, the cost may increase (proposal estimate is \$45 per manifold at a quantity of 24,000)	30	
		to MSU, continue PVC brazing tests with microwaves and ultrasound	25	
		Epoxy tests for manifolds, lifetime tests, \$ to universities?	25	
		Setup prototype factory (at Minnesota?) for prototype Near modules	50	
		Tech help in prototype factory (at Minnesota?) for a few modules anyway -- maybe the bulk of the 400 for prototype Near will not be until FY07?	20	
1.6	Electronics			724
		to Harvard for prototype APD boards (\$200 each estimated)	4	
		2 ASIC prototype submissions in November, Yarema est.	66	
		1 backup submission assuming 1 chip needs iteration	33	
		exercise option with Hamamatsu for 2nd 10 APD parts	38	
		procure 400 parts from Hamatsu for prototype Near Detector @ \$872 each (3/15 budgetary estimate)	349	
		procure 400 parts for 2 ASICS above for prototype Near Detector (Yarema says 300 parts one ASIC for \$ 54 K, not clear what it takes for 400)	110	
		procure 400 boards for prototype Near Detector	80	
		TE coolers	4	
		Board assembly (+ some components)	40	

May be to ANL

NOvA R&D WBS	Category	FY06 item	K\$ in FY06	K\$ roll-up
1.7	Data Acquisition			0
		What?	?	
		some computer system to start investigating multiple board readouts?		
1.8	Detector Assembly			355
		to ANL for 1 engineer (1 FTE @ 50/50 share)	100	
		to ANL for tech help (1 FTE @ 50/50 share)	65	
		full height prototype studies, prototype 1/5 width block raiser	45	
		full height prototype, vacuum lifting fixtures for time and motion studies of assembly	15	
		Structural parts for prototype Near Detector, includes secondary containment	100	
		prototype Near muon catcher (boneyard steel?)	0	
		prototype scintillator dispenser, use on prototype Near	20	
		prototype epoxy dispenser	10	
1.9	Project Management			156
		to Harvard for John Oliver time as Proj. Eng (.5 FTE? 50/50 share agreed)	50	
		John, Ron travel	20	
		travel for Pushka, Pla-Dalmau, John Oliver	20	
		travel costs for Level 2 managers (7people x 3 trips x \$2K?)	42	
		Suzanne, Harry training?	5	
		licenses for Open Plan are free?	0	
		upgrade a couple of computers	7	
		CDR duplicating costs?	12	
		"Project" R&D Subtotal		2857